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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION III  
1650 Arch Street  
Philadelphia, Pennsylvania 19103

**SUBJECT:** Risk-Based Concentration Table

**FROM:** Jennifer Hubbard, Toxicologist  
Technical Support Branch (3HS41)

**TO:** RBC Table Users

**DATE:** October 20, 2006

Attached is the EPA Region III Risk-Based Concentration (RBC) Table, which we prepare and post periodically for all interested parties. The Table's current web address is <http://www.epa.gov/reg3hwmd/risk/human/index.htm>.

For questions about the Table, please consult this memo. You can also consult the RBC Table companion documents, such as the Technical Background Document and Frequently Asked Questions, that are posted on the website. If you don't find the answer there, and your question is about risk assessment or the science behind the RBCs, you can reach me at [hubbard.jennifer@epa.gov](mailto:hubbard.jennifer@epa.gov) or 215-814-3328. For technical difficulties in reading, displaying, or downloading the table from the web, please contact [burton.talisha@epa.gov](mailto:burton.talisha@epa.gov).

#### BASIC INFORMATION

The RBC Table contains Reference Doses (RfDs) and Cancer Slope Factors (CSFs) for about 400 chemicals. These toxicity factors have been combined with "standard" exposure scenarios to calculate RBCs--chemical concentrations corresponding to fixed levels of risk (i.e., a Hazard Quotient (HQ) of 1, or lifetime cancer risk of 1E-6, whichever occurs at a lower concentration) in water, air, fish tissue, and soil. The equations and the exposure factors are shown in the RBC Table companion memo, the Technical Background Document.

The Region III toxicologists use RBCs to screen sites not yet on the NPL, respond rapidly to citizen inquiries, and spot-check formal baseline risk assessments. The primary use of RBCs is for chemical screening during baseline risk assessment (see EPA Regional Guidance EPA/903/R-93-001, "Selecting Exposure Routes and Contaminants of Concern by Risk-Based Screening"). The exposure equations come from EPA's Risk Assessment Guidance for Superfund (RAGS), while the exposure factors are those recommended in RAGS or supplemental guidance from the Superfund program. The attached Technical Background Document provides specific equations and assumptions. Simply put, RBCs are like risk assessments run in reverse. For a single contaminant in a single medium, under standard default exposure assumptions, the RBC corresponds to the target risk or hazard quotient.

RBCs also have several important limitations. Specifically excluded from consideration are (1) transfers from soil to air, (2) cumulative risk from multiple contaminants or media, and (3) dermal risk. Additionally, the risks for inhalation of vapors from water are based on a very simple model, whereas detailed risk assessments may use more detailed showering models. Many RBCs are also based on adult risks. For more information about children's risks, see the Technical Background Document and Frequently Asked Question #12. Furthermore, the toxicity information in the Table has been assembled by hand and (despite extensive checking and years of use) may contain errors. It's advisable to cross-check before relying on any RfDs or CSFs in the Table. If you note any errors, please let us know.

It is important to note that, at this time, the Table uses inhalation RfDs and CSFs rather than RfCs (Reference Concentrations) and inhalation unit cancer risks. This was initially done because the latter factors incorporate exposure assumptions and were ostensibly based on residential adults. Because risk assessors needed to evaluate risks for many types of scenarios, the factors were converted to the more traditional RfDs and CSFs. Unless otherwise indicated in the toxicity-factor source, the assumption was that RfCs and unit risks should be adjusted by a 70-kilogram body weight and a 20 m<sup>3</sup>/day inhalation rate to generate the RfDs and CSFs. In fact, for adults, the use of an inhalation RfD vs. an RfC does not typically change the risk estimate significantly.

Many users want to know if the RBCs can be used as valid no-action levels or cleanup levels, especially for soils. The answer is a bit complex. First, it is important to realize that the RBC Table does not constitute regulation or guidance, and should not be viewed as a substitute for a site-specific risk assessment. For sites where:

- A single medium is contaminated;
- A single contaminant contributes nearly all the health risk;
- Volatile, dermal contact, and other pathways not included in the RBCs are not expected to be significant;
- The exposure scenarios and assumptions used in the RBC table are appropriate for the site;
- The fixed risk levels used in the RBC table are appropriate for the site; and
- Risk to ecological receptors is not expected to be significant;

the RBCs would probably be protective as no-action levels or cleanup goals. However, to the extent that a site deviates from this description, as most do, the RBCs would not necessarily be appropriate.

To summarize, the Table should generally not be used to set cleanup or no-action levels at CERCLA sites or RCRA Corrective Action sites, to substitute for EPA guidance for preparing baseline risk assessments, or to determine if a waste is hazardous under RCRA.

## FEATURES OF THE TABLE

The RBC Table was originally developed by Roy L. Smith, Ph.D., for use by risk assessors in the Region III Superfund program. Dr. Smith is no longer with Region III, and the

Table continues to evolve. The following features of the table should be noted; some of the current features differ from those of past versions of the RBC Table.

## WHAT'S NEW

EPA's National Center for Environmental Assessment (NCEA) is the main source of provisional toxicity values for chemicals without IRIS values. Recently, NCEA has recommended ATSDR chronic MRLs for some chemicals, consistent with their description in OSWER Directive 9285.7-53 as Tier 3 toxicity values. In keeping with this, the Region III RBC Table now includes some MRLs as provisional values, coded "M" on the Table. MRLs were only used in the following cases: 1) if there was no IRIS (Tier 1) or current PPRTV (Tier 2) value; 2) if the MRL was more recent than the provisional or HEAST value; and 3) if the MRL was chronic.

We have eliminated chemicals whose PPRTVs have been retired by NCEA. For toxicity values for chemicals that do not appear on the RBC Table or in IRIS, or to obtain supporting documentation for PPRTVs, consult NCEA.

The most significant new change to this table is the incorporation of age-dependent adjustment factors (ADAFs) in the RBCs of chemicals that are carcinogenic via a mutagenic mode of action. This approach is consistent with the 2005 Guidelines for Carcinogen Risk Assessment and the Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens. As announced in the Federal Register on April 7, 2005 (70 FR 17765-17817), EPA is now incorporating the principles of the Guidelines and the Supplemental Guidance in its risk assessments.

Vinyl chloride is one of the chemicals named in the Supplemental Guidance as needing adjustment for early-life cancer risk estimates. However, chemical-specific adjustments for vinyl chloride have been available on IRIS, and the RBC Table has already incorporated these adjustments, for a few years now (see the May 6, 2001 memo, "Derivation of Vinyl Chloride RBCs," at <http://www.epa.gov/reg3hwmd/risk/human/info/vcrbc.pdf>).

EPA has now identified several other carcinogens that act via a mutagenic mode of action, and to account for their early-life exposures, the default ADAFs of 10 for ages 0-2 and 3 for ages 2-16 have now been incorporated into the RBC Table. The chemicals affected by these default ADAF adjustments are marked on the Table with an "m" next to the chemical name. Example calculations for these RBCs are provided in the supplemental memo, "Derivation of RBCs for Carcinogens that Act Via a Mutagenic Mode of Action and Incorporate Default ADAFs" (October 19, 2006) found on the Region III RBC website at <http://www.epa.gov/reg3hwmd/risk/human/index.htm>.

## FEATURES AND HISTORICAL CHANGES

Updated toxicity factors have been used wherever available. However, because IRIS and provisional values are updated more frequently than the RBC Table, RBC Table users are ultimately responsible for obtaining the most up-to-date values. The RBC Table is provided as a convenience, but toxicity factors are compiled from the original sources and it is those original sources that should serve as the definitive reference.

Changes to the table since the last semi-annual version have been marked with asterisks (\*\*). Changes may involve a corrected CAS number or a correction in the VOC status, a change in the SSL, or changes of RfDs and CSFs or their sources.

For access to "P" and "E" coded values, please see Frequently Asked Question #10 for more information.

Please note that the "industrial soil" numbers were changed on the April 2003 RBC Table to reflect the higher soil ingestion rate of the outdoor worker. This is consistent with the new draft SSL Guidance and with the practice in other regions, as well as providing for additional protection of workers.

RBCs are not rounded to 1E6 ppm, as they were in some earlier versions of the Table. For certain low-toxicity chemicals, the RBCs exceed possible concentrations at the target risks. In such cases, Dr. Smith rounded these numbers to the highest possible concentration, or 1E6 ppm. This type of truncation has been discontinued so that Table users can adjust the RBCs to a different target risk whenever necessary. For example, when screening chemicals at a target HQ of 0.1, noncarcinogenic RBCs may simply be divided by 10. Such scaling is not possible when RBCs are rounded. Users who are interested in truncation can also consult the Soil Screening Guidance for a discussion of "C<sub>sat</sub>," the saturation concentration.

At Region III Superfund sites, noncancer RBCs are typically adjusted downward to correspond to a target HQ of 0.1 rather than 1. (This is done to ensure that chemicals with additive effects are not prematurely eliminated during screening. Note that the RBCs displayed on the table are shown at an HQ of 1; to arrive at the RBC at 0.1, data users must do the conversion themselves.) However, some chemicals have RBCs at HQs of 0.1 that are lower than their RBCs at 1E-6 cancer risk. In other words, the screening RBC would change from carcinogenic to noncarcinogenic. These chemicals are flagged with a "!" symbol. Therefore, assessors screening with adjusted RBCs will be alerted to this situation. See the companion attachment to the RBC Table, "Alternate RBCs," for alternate values for "!" RBCs.

Earlier versions of this Table included a substitution of inhalation toxicity factors for oral factors whenever oral factors were unavailable (this applied only to groundwater and air, but not soil or fish). This practice was discontinued in order to minimize the uncertainty associated with such a conversion. The discontinuation of this practice did not significantly decrease the number of available RBCs.

The criterion for "VOC status" is in accordance with RAGS Part B: chemicals with Henry's Law constants greater than 1E-5 and molecular weight less than 200 are marked as VOCs.

Earlier versions of this Table included soil screening levels (SSLs), when those values were available in draft form. Since the finalization of the SSL Guidance, risk assessors are urged to consult the final SSL Guidance directly. However, for generic use in Region III, the table now contains soil-to-groundwater SSLs in accordance with the new guidance. For more information, see the Region III memo on SSLs, or consult the national SSL guidance directly (Soil Screening Guidance: User's Guide, April 1996, Publication 9355.4-23; and Soil Screening Guidance: Technical Background Document, May 1996; EPA/540/R-95/128; as well as Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, December 2002; OSWER 9355.4-24).

You may notice there are two rows for uranium, one reflecting the IRIS (EPA consensus) value and the other reflecting a more recent, but provisional, value. Region III has shown both on this table, rather than choosing one over the other, to give Table users as much information as possible.

Vinyl chloride is handled differently from most other chemicals because of the unique aspects of its slope factor derivation. Readers are referred to the memo, Derivation of Vinyl Chloride RBCs, which is a companion document to this RBC Table.

These are the noncancer RBCs at an HI of 1 and 0.1 for "!" chemicals.

They are shown because screening at an HI of 0.1, in accordance with Region III guidance, will result in noncancer RBCs being lower than the cancer RBCs for certain chemicals marked with "!" on the standard RBC table.

	ug/l Tap		ug/m3 Air		mg/kg Fish		mg/kg Industrial		mg/kg Residential	
HI	1	0.1	1	0.1	1	0.1	1	0.1	1	0.1
aniline									547.5	54.75
epichlorohydrin									469	46.9
hexachlorobutadiene	7.3	0.73	0.73	0.073	0.27	0.027	204	20	15.6	1.56
hexachloroethane	36.5	3.65	3.65	0.365	1.35	0.135	1022	102	78	7.8
polybrominated biphenyls									0.55	0.055
aroclor-1016	2.55	0.255	0.255	0.0255	0.09	0.009	72	7.2	1.56	0.156
aroclor-1254										
2,4,6-trinitrotoluene	1.83E+001	1.83E+000	1.8	0.18	0.68	0.068	511	51	39	3.9

Nitrate and nitrite have MCLs of 10000 ug/L and 1000 ug/L, respectively, based on protection against methemoglobinemia in infants.

These MCLs may serve as alternate tap water RBCs for populations that include infants, because they are expected to be more sensitive to this endpoint than adults.

J. Soto assisted in the preparation of the original version of this table

Sources: I = IRIS H = HEAST A = HEAST Alternate M = ATSDR MRL (chronic) E = EPA-NCEA provisional value O = other P = EPA provisional peer-reviewed m = Default ADAFs applied, carcinogenic via mutagenic mode of action							Basis: C = Carcinogenic effects N = Noncarcinogenic effects I = RBC at HI of 0.1 < RBC-c; see Alternate RBCs II = See Alternate RBCs					Region III SSIs	
Chemical	CAS	RfDo mg/kg/d	CSFo 1/mg/kg/d	RfDi mg/kg/d	CSFi 1/mg/kg/d	VOC	Risk-based concentrations				Soil, for groundwater migration		
							Tap water ug/l	Ambient air ug/m <sup>3</sup>	Fish mg/kg	Soil Industrial mg/kg	Residential mg/kg	DAF 1 mg/kg	DAF 20 mg/kg
ACETALDEHYDE	75070			2.57E-003 I	7.7E-003 I	y	1.6E+000 C	8.1E-001 C				3.8E-004	7.7E-003 C
ACETOCHLOR	34256821	2E-002 I					7.3E+002 N	7.3E+001 N	2.7E+001 N	2.0E+004 N	1.6E+003 N		
ACETONE	67641	9.00E-001 I				y	5.5E+003 N	3.3E+003 N	1.2E+003 N	9.2E+005 N	7.0E+004 N	1.1E+000	2.2E+001 N
ACETONITRILE	75058			1.7E-002 I		y	1.2E+002 N	6.2E+001 N					
ACETOPHENONE	98862	1.00E-001 I				y	6.1E+002 N	3.7E+002 N	1.4E+002 N	1.0E+005 N	7.8E+003 N	1.6E-001	3.2E+000 N
ACROLEIN	107028	5.00E-004 I		5.70E-006 I		y	4.2E-002 N	2.1E-002 N	6.8E-001 N	5.1E+002 N	3.9E+001 N	1.0E-005	2.0E-004 N
ACRYLAMIDE	79061	2.00E-004 I	4.50E+000 I		4.50E+000 I		1.5E-002 C	1.4E-003 C	7.0E-004 C	6.4E-001 C	1.4E-001 C	3.7E-006	7.4E-005 C
ACRYLONITRILE	.107131	1.00E-003 H	5.40E-001 I	5.70E-004 I	2.40E-001 I	y	3.7E-002 C	2.6E-002 C	5.8E-003 C	5.3E+000 C	1.2E+000 C	7.4E-006	1.5E-004 C
ALACHLOR	15972608	1.00E-002 I	8.00E-002 H				8.4E-001 C	7.8E-002 C	3.9E-002 C	3.6E+001 C	8.0E+000 C	3.5E-004	7.0E-003 C
ALAR	1596845	1.50E-001 I					5.5E+003 N	5.5E+002 N	2.0E+002 N	1.5E+005 N	1.2E+004 N		
ALDICARB	116063	1.00E-003 I					3.7E+001 N	3.7E+000 N	1.4E+000 N	1.0E+003 N	7.8E+001 N	1.0E-002	2.1E-001 N
ALDICARB SULFONE	1646884	1.00E-003 I					3.7E+001 N	3.7E+000 N	1.4E+000 N	1.0E+003 N	7.8E+001 N	7.5E-003	1.5E-001 N
ALDRIN	309002	3.00E-005 I	1.70E+001 I		1.70E+001 I		3.9E-003 C	3.7E-004 C	1.9E-004 C	1.7E-001 C	3.8E-002 C	3.8E-004	7.7E-003 C
AMINODINITROTOLUENES		2.00E-003 E					7.3E+001 N	7.3E+000 N	2.7E+000 N	2.0E+003 N	1.6E+002 N		
AMMONIA	7664417			2.86E-002 I		y	2.1E+002 N	1.0E+002 N					
ANILINE	62533	7.00E-003 P	5.70E-003 I	2.90E-004 I			1.2E+001 C	1.1E+000 N	5.5E-001 C	5.0E+002 C	1.1E+002 C	6.8E-003	1.4E-001 C
ANTIMONY	7440360	4.00E-004 I					1.5E+001 N	1.5E+000 N	5.4E-001 N	4.1E+002 N	3.1E+001 N	6.6E-001	1.3E+001 N
ANTIMONY TRIOXIDE	1309644	4.00E-004 H		5.70E-005 I			1.5E+001 N	2.1E-001 N	5.4E-001 N	4.1E+002 N	3.1E+001 N		
ARSENIC	7440382	3.00E-004 I	1.50E+000 I		1.51E+001 I		4.5E-002 C	4.1E-004 C	2.1E-003 C	1.9E+000 C	4.3E-001 C	1.3E-003	2.6E-002 C
ARSINE	7784421			1.40E-005 I		y	1.0E-001 N	5.1E-002 N					
ASSURE	76578148	9.00E-003 I					3.3E+002 N	3.3E+001 N	1.2E+001 N	9.2E+003 N	7.0E+002 N		
ATRAZINE	1912249	3.50E-002 I	2.20E-001 H				3.0E-001 C	2.8E-002 C	1.4E-002 C	1.3E+001 C	2.9E+000 C	4.4E-004	8.8E-003 C
BARIUM	7440393	2.00E-001 I			1.40E-004 A		7.3E+003 N	5.1E-001 N	2.7E+002 N	2.0E+005 N	1.6E+004 N	3.0E+002	6.0E+003 N
BAYGON	114261	4.00E-003 I					1.5E+002 N	1.5E+001 N	5.4E+000 N	4.1E+003 N	3.1E+002 N		
BAYTHROID	68359375	2.50E-002 I					9.1E+002 N	9.1E+001 N	3.4E+001 N	2.6E+004 N	2.0E+003 N		
BENTAZON	25057890	3.00E-002 I					1.1E+003 N	1.1E+002 N	4.1E+001 N	3.1E+004 N	2.3E+003 N		
BENZALDEHYDE	100527	1.00E-001 I					3.7E+003 N	3.7E+002 N	1.4E+002 N	1.0E+005 N	7.8E+003 N		
BENZENE	71432	4.00E-003 I	5.5E-002 I	8.6E-003 I	2.7E-002 I	y	3.4E-001 C	2.3E-001 C	5.7E-002 C	5.2E+001 C	1.2E+001 C	9.5E-005	1.9E-003 C
BENZENETHIOL	108985	-1.00E-005 H					6.1E-002 N	3.7E-002 N	1.4E-002 N	1.0E+001 N	7.8E-001 N		
**BENZIDINE	m	92875	3.00E-003 I	2.30E+002 I		2.30E+002 I	1.0E-004 C	1.0E-005 C	1.4E-005 C	1.2E-002 C	7.0E-004 C		
BENZOIC ACID	65850	4.00E+000 I					1.5E+005 N	1.5E+004 N	5.4E+003 N	4.1E+006 N	3.1E+005 N		
BENZYL ALCOHOL	100516	5.00E-001 P					1.8E+004 N	1.8E+003 N	6.8E+002 N	5.1E+005 N	3.9E+004 N	7.3E+000	1.5E+002 N
BENZYL CHLORIDE	100447		0.17 I			y	6.2E-002 C	3.7E-002 C	1.9E-002 C	1.7E+001 C	3.8E+000 C	1.9E-005	3.7E-004 C
BERYLLIUM	7440417	2.00E-003 I		5.7E-006 I	8.40E+000 I		7.3E+001 N	7.5E-004 C	2.7E+000 N	2.0E+003 N	1.6E+002 N	5.8E+001	1.2E+003 N
BIPHENYL	92524	5.00E-002 I					3.0E+002 N	1.8E+002 N	6.8E+001 N	5.1E+004 N	3.9E+003 N	4.8E+000	9.6E+001 N
BIS(2-CHLOROETHYL)ETHER	111444		1.10E+000 I		1.10E+000 I	y	9.6E-003 C	5.7E-003 C	2.9E-003 C	2.6E+000 C	5.8E-001 C	2.2E-006	4.4E-005 C
BIS(2-CHLOROISOPROPYL)ETHER	108601	4.00E-002 I	7.00E-002 H		3.50E-002 H	y	2.6E-001 C	1.8E-001 C	4.5E-002 C	4.1E+001 C	9.1E+000 C	8.4E-005	1.7E-003 C
BIS(CHLOROMETHYL)ETHER	542881		2.20E+002 I		2.20E+002 I	y	4.8E-005 C	2.8E-005 C	1.4E-005 C	1.3E-002 C	2.9E-003 C	9.7E-009	1.9E-007 C
BIS(2-ETHYLHEXYL)PHTHALATE	117817	2.00E-002 I	1.40E-002 I				4.8E+000 C	4.5E-001 C	2.3E-001 C	2.0E+002 C	4.6E+001 C	1.4E+002	2.9E+003 C
BORON	7440428	2.00E-001 I		5.70E-003 H			7.3E+003 N	2.1E+001 N	2.7E+002 N	2.0E+005 N	1.6E+004 N		
BROMODICHLOROMETHANE	75274	2.00E-002 I	6.20E-002 I			y	1.7E-001 C	1.0E-001 C	5.1E-002 C	4.6E+001 C	1.0E+001 C	5.4E-005	1.1E-003 C
BROMOETHENE	593602			8.6E-004 I	1.10E-001 H	y	1.1E-001 C	5.7E-002 C				5.4E-005	1.1E-003 C
BROMOFORM	75252	2.00E-002 I	7.90E-003 I		3.90E-003 I		8.5E+000 C	1.6E+000 C	4.0E-001 C	3.6E+002 C	8.1E+001 C	3.3E-003	6.7E-002 C
BROMOMETHANE	74839	1.40E-003 I			1.40E-003 I	y	8.5E+000 N	5.1E+000 N	1.9E+000 N	1.4E+003 N	1.1E+002 N	2.1E-003	4.1E-002 N
BROMOPHOS	2104963	5.00E-003 H					1.8E+002 N	1.8E+001 N	6.8E+000 N	5.1E+003 N	3.9E+002 N		

Sources: I = IRIS H = HEAST A = HEAST Alternative M = ATSDR MRL (chronic) E = EPA-NCEA provisional value O = other P = EPA provisional peer-reviewed m = Default ADAs applied, carcinogenic via mutagenic mode of action							Basis: C = Carcinogenic effects N = Noncarcinogenic effects I = RBC at HI of 0.1 < RBC-c; see Alternate RBCs II = See Alternate RBCs					Region III SSIs	
Chemical	CAS	RfDo mg/kg/d	CSFo 1/mg/kg/d	RfDi mg/kg/d	CSFi 1/mg/kg/d	VOC	Risk-based concentrations				Soil, for groundwater migration		
							Tap water ug/l	Ambient air ug/m3	Fish mg/kg	Soil Industrial mg/kg	Residential mg/kg	DAF 1 mg/kg	DAF 20 mg/kg
1,3-BUTADIENE	106990			5.7E-004 I	1.00E-001 I	y	1.3E-001 C	6.3E-002 C				7.0E-005	1.4E-003 C
1-BUTANOL	71363	1.00E-001 I					3.7E+003 N	3.7E+002 N	1.4E+002 N	1.0E+005 N	7.8E+003 N	7.8E-001	1.6E+001 N
BUTYLBENZYLPHTHALATE	85687	2.00E-001 I					7.3E+003 N	7.3E+002 N	2.7E+002 N	2.0E+005 N	1.6E+004 N	8.4E+002	1.7E+004 N
CADMUM-WATER	7440439	5.00E-004 I		5.7E-005 E	6.30E+000 I		1.8E+001 N	9.9E-004 C	6.8E-001 N	5.1E+002 N	3.9E+001 N	1.4E+000	2.7E+001 N
CADMUM-FOOD	7440439	1.00E-003 I		5.7E-005 E	6.30E+000 I		3.7E+001 N	9.9E-004 C	1.4E+000 N	1.0E+003 N	7.8E+001 N	2.7E+000	5.5E+001 N
CAPROLACTAM	105602	5.00E-001 I					1.8E+004 N	1.8E+003 N	6.8E+002 N	5.1E+005 N	3.9E+004 N		
CARBARYL	63252	1.00E-001 I					3.7E+003 N	3.7E+002 N	1.4E+002 N	1.0E+005 N	7.8E+003 N	1.5E+000	3.0E+001 N
CARBON DISULFIDE	75150	1.00E-001 I		2.00E-001 I		y	1.0E+003 N	7.3E+002 N	1.4E+002 N	1.0E+005 N	7.8E+003 N	9.5E-001	1.9E+001 N
CARBON TETRACHLORIDE	56235	7.00E-004 I	1.30E-001 I	5.00E-002 M	5.30E-002 I	y	1.6E-001 C	2.4E-002 C	2.2E+001 C	4.9E+000 C	1.1E-004	2.1E-003 C	
CARBOSULFAN	55285148	1.00E-002 I					3.7E+002 N	3.7E+001 N	1.4E+001 N	1.0E+004 N	7.8E+002 N		
CHLORAL HYDRATE	302170	1.00E-001 I					3.7E+003 N	3.7E+002 N	1.4E+002 N	1.0E+005 N	7.8E+003 N		
CHLORANIL	118752			4.00E-001 H			1.7E-001 C	1.6E-002 C	7.9E-003 C	7.2E+000 C	1.6E+000 C		
CHLORDANE	57749	5.00E-004 I	3.5E-001 I	2.00E-004 I	3.5E-001 I		1.9E-001 C	1.8E-002 C	9.0E-003 C	8.2E+000 C	1.8E+000 C	4.6E-002	9.2E-001 C
CHLORINE DIOXIDE	10049044	3.00E-002 I		5.70E-005 I		y	4.2E-001 N	2.1E-001 N	4.1E+001 N	3.1E+004 N	2.3E+003 N		
CHLOROACETIC ACID	79118	2.00E-003 H					7.3E+001 N	7.3E+000 N	2.7E+000 N	2.0E+003 N	1.6E+002 N		
4-CHLOROANILINE	106478	4.00E-003 I					1.5E+002 N	1.5E+001 N	5.4E+000 N	4.1E+003 N	3.1E+002 N	4.8E-002	9.7E-001 N
CHLOROBENZENE	108907	2.00E-002 I		1.4E-002 P		y	9.0E+001 N	5.1E+001 N	2.7E+001 N	2.0E+004 N	1.6E+003 N	3.4E-002	6.8E-001 N
2-CHLORO-1,3-BUTADIENE	126998	2.00E-002 A		2.00E-003 H		y	1.4E+001 N	7.3E+000 N	2.7E+001 N	2.0E+004 N	1.6E+003 N	6.0E-003	1.2E-001 N
1-CHLORO-1,1-DIFLUOROETHANE	75683			1.40E+001 I		y	1.0E+005 N	5.1E+004 N				7.0E+001	1.4E+003 N
CHLORODIFLUOROMETHANE	75456			1.40E+001 I		y	1.0E+005 N	5.1E+004 N				7.0E+001	1.4E+003 N
CHLOROETHANE	75003	4.00E-001 E	2.90E-003 E	2.90E+000 I		y	3.6E+000 C	2.2E+000 C	1.1E+000 C	9.9E+002 C	2.2E+002 C	9.6E-004	1.9E-002 C
CHLOROFORM	67663	1.00E-002 I		1.4E-002 E	8.10E-002 I	y	1.5E-001 C	7.7E-002 C	1.4E+001 N	1.0E+004 N	7.8E+002 N	4.5E-005	9.1E-004 C
CHLOROMETHANE	74873			2.6E-002 I		y	1.9E+002 N	9.5E+001 N				4.6E-002	9.3E-001 N
4-CHLORO-2-METHYLANILINE	95692		5.80E-001 H				1.2E-001 C	1.1E-002 C	5.4E-003 C	4.9E+000 C	1.1E+000 C		
BETA-CHLORONAPHTHALENE	91587	8.00E-002 I				y	4.9E+002 N	2.9E+002 N	1.1E+002 N	8.2E+004 N	6.3E+003 N	1.6E+000	3.2E+001 N
2-CHLOROPHENOL	95578	5.00E-003 I				y	3.0E+001 N	1.8E+001 N	6.8E+000 N	5.1E+003 N	3.9E+002 N		
2-CHLOROPROPANE	75296			2.90E-002 H		y	2.1E+002 N	1.1E+002 N				6.6E-002	1.3E+000 N
O-CHLOROTOLUENE	95498	2.00E-002 I				y	1.2E+002 N	7.3E+001 N	2.7E+001 N	2.0E+004 N	1.6E+003 N	6.5E-002	1.3E+000 N
P-CHLOROTOLUENE	106434	7.00E-002 P				y	4.3E+002 N	2.6E+002 N	9.5E+001 N	7.2E+004 N	5.5E+003 N		
CHLORPYRIFOS	2921882	3.00E-003 I				y	1.1E+002 N	1.1E+001 N	4.1E+000 N	3.1E+003 N	2.3E+002 N	3.2E+000	6.3E+001 N
CHLORPYRIFOS-METHYL	5598130	1.00E-002 H					3.7E+002 N	3.7E+001 N	1.4E+001 N	1.0E+004 N	7.8E+002 N		
CHROMIUM III	16065831	1.50E+000 I					5.5E+004 N	5.5E+003 N	2.0E+003 N	1.5E+006 N	1.2E+005 N	9.9E+007	2.0E+009 N
CHROMIUM VI	18540299	3.00E-003 I		3.00E-005 I	4.10E+001 I		1.1E+002 N	1.5E-004 C	4.1E+000 N	3.1E+003 N	2.3E+002 N	2.1E+000	4.2E+001 N
**COKE OVEN EMISSIONS (COAL TAR)		m	8007452			2.2 I		1.0E-003 C					
COPPER	7440508	4.00E-002 H					1.5E+003 N	1.5E+002 N	5.4E+001 N	4.1E+004 N	3.1E+003 N	5.3E+002	1.1E+004 N
CUMENE	98828	1.00E-001 I		1.10E-001 I		y	6.6E+002 N	4.0E+002 N	1.4E+002 N	1.0E+005 N	7.8E+003 N	3.2E+000	6.4E+001 N
CYANIDE (FREE)	57125	2.00E-002 I					7.3E+002 N	7.3E+001 N	2.7E+001 N	2.0E+004 N	1.6E+003 N	7.4E+000	1.5E+002 N
CALCIUM CYANIDE	592018	4E-002 I					1.5E+003 N	1.5E+002 N	5.4E+001 N	4.1E+004 N	3.1E+003 N		
COPPER CYANIDE	544923	5.00E-003 I					1.8E+002 N	1.8E+001 N	6.8E+000 N	5.1E+003 N	3.9E+002 N		
CYANOGEN	460195	4.00E-002 I				y	2.4E+002 N	1.5E+002 N	5.4E+001 N	4.1E+004 N	3.1E+003 N		
HYDROGEN CYANIDE	74908	2.00E-002 I		8.60E-004 I		y	6.2E+000 N	3.1E+000 N	2.7E+001 N	2.0E+004 N	1.6E+003 N	1.1E-001	2.2E+000 N
POTASSIUM CYANIDE	151508	5.00E-002 I					1.8E+003 N	1.8E+002 N	6.8E+001 N	5.1E+004 N	3.9E+003 N		
POTASSIUM SILVER CYANIDE	506616	2.00E-001 I					7.3E+003 N	7.3E+002 N	2.7E+002 N	2.0E+005 N	1.6E+004 N		
SILVER CYANIDE	506649	1.00E-001 I					3.7E+003 N	3.7E+002 N	1.4E+002 N	1.0E+005 N	7.8E+003 N	3.1E+001	6.2E+002 N
SODIUM CYANIDE	143339	4.00E-002 I					1.5E+003 N	1.5E+002 N	5.4E+001 N	4.1E+004 N	3.1E+003 N		

Sources: I = IRIS H = HEAST A = HEAST Alternate M = ATSDR MRL (chronic) E = EPA-NCEA provisional value O = other P = EPA provisional peer-reviewed m = Default ADAs applied, carcinogenic via mutagenic mode of action							Basis: C = Carcinogenic effects N = Noncarcinogenic effects I = RBC at HI of 0.1 < RBC-C; see Alternate RBCs II = See Alternate RBCs					
Chemical	CAS	RfDo mg/kg/d	CSFo 1/mg/kg/d	RfDi mg/kg/d	CSFi 1/mg/kg/d	VOC	Risk-based concentrations				Region III SSIs	
							Tap water ug/l	Ambient air ug/m <sup>3</sup>	Fish mg/kg	Soil Industrial mg/kg	Residential mg/kg	Soil, for groundwater migration DAF 1 mg/kg
**THIOLCYANATES		2.00E-004 P					7.3E+000 N	7.3E-001 N	2.7E-001 N	2.0E+002 N	1.6E+001 N	
ZINC CYANIDE	557211	5.00E-002 I					1.8E+003 N	1.8E+002 N	6.8E+001 N	5.1E+004 N	3.9E+003 N	1.1E+002 2.3E+003 N
CYCLOHEXANE	110827			1.70E+000 I		Y	1.2E+004 N	6.2E+003 N				
CYCLOHEXANONE	108941	5.00E+000 I					1.8E+005 N	1.8E+004 N	6.8E+003 N	5.1E+006 N	3.9E+005 N	6.1E+001 1.2E+003 N
CYHALOTHIN/KARATE	68085858	5.00E-003 I					1.8E+002 N	1.8E+001 N	6.8E+000 N	5.1E+003 N	3.9E+002 N	
CYPERMETHRIN	52315078	1.00E-002 I					3.7E+002 N	3.7E+001 N	1.4E+001 N	1.0E+004 N	7.8E+002 N	
DACTHAL	1861321	1.00E-002 I					3.7E+002 N	3.7E+001 N	1.4E+001 N	1.0E+004 N	7.8E+002 N	
DALAPON	75990	3.00E-002 I					1.1E+003 N	1.1E+002 N	4.1E+001 N	3.1E+004 N	2.3E+003 N	3.5E-001 7.1E+000 N
DDD	72548		2.40E-001 I				2.8E-001 C	2.6E-002 C	1.3E-002 C	1.2E+001 C	2.7E+000 C	5.6E-001 1.1E+001 C
DDE	72559		3.40E-001 I				2.0E-001 C	1.8E-002 C	9.3E-003 C	8.4E+000 C	1.9E+000 C	1.6E+000 3.5E+001 C
DDT	50293	5.00E-004 I	3.40E-001 I		3.40E-001 I		2.0E-001 C	1.8E-002 C	9.3E-003 C	8.4E+000 C	1.9E+000 C	5.8E-002 1.2E+000 C
DIAZINON	333416	9.00E-004 H					3.3E+001 N	3.3E+000 N	1.2E+000 N	9.2E+002 N	7.0E+001 N	2.1E-002 4.3E-001 N
1,4-DIBROMOBENZENE	106376	1.00E-002 I					3.7E+002 N	3.7E+001 N	1.4E+001 N	1.0E+004 N	7.8E+002 N	
DIBROMOCHLOROMETHANE	124481	2.00E-002 I	8.40E-002 I				1.3E-001 C	7.5E-002 C	3.8E-002 C	3.4E+001 C	7.6E+000 C	4.1E-005 8.3E-004 C
**1,2-DIBROMO-3-CHLOROPROPANE	m	2.00E-004 P	8.00E-001 P	5.70E-005 I	2.10E+001 P	Y	2.0E-004 C	1.0E-004 C	3.9E-003 C	3.6E+000 C	2.0E-001 C	1.8E-007 3.7E-006 C
1,2-DIBROMOETHANE	106934	9.00E-003 I	2.00E+000 I	2.6E-003 I	2.00E+000 I	Y	5.3E-003 C	3.1E-003 C	1.6E-003 C	1.4E+000 C	3.2E-001 C	3.0E-006 6.0E-005 C
DIBUTYLPHthalATE	84742	1.00E-001 I					3.7E+003 N	3.7E+002 N	1.4E+002 N	1.0E+005 N	7.8E+003 N	2.5E+002 5.0E+003 N
DICAMBA	1918009	3.00E-002 I					1.1E+003 N	1.1E+002 N	4.1E+001 N	3.1E+004 N	2.3E+003 N	2.2E-001 4.5E+000 N
1,2-DICHLOROBENZENE	95501	9.00E-002 I		4.00E-002 H		Y	2.7E+002 N	1.5E+002 N	1.2E+002 N	9.2E+004 N	7.0E+003 N	2.3E-001 4.6E+000 N
1,3-DICHLOROBENZENE	541731	3.00E-003 E				Y	1.8E+001 N	1.1E+001 N	4.1E+000 N	3.1E+003 N	2.3E+002 N	1.5E-002 2.9E-001 N
1,4-DICHLOROBENZENE	106467	3.00E-002 E	2.40E-002 H	2.29E-001 I	2.2E-002 E	Y	4.7E-001 C	2.8E-001 C	1.3E-001 C	1.2E+002 C	2.7E+001 C	3.6E-004 7.1E-003 C
3,3'-DICHLOROBENZIDINE	91941		4.50E-001 I				1.5E-001 C	1.4E-002 C	7.0E-003 C	6.4E+000 C	1.4E+000 C	2.5E-004 4.9E-003 C
DICHLORODIFLUOROMETHANE	75718	2.00E-001 I		5.00E-002 A		Y	3.5E+002 N	1.8E+002 N	2.7E+002 N	2.0E+005 N	1.6E+004 N	5.5E-001 1.1E+001 N
1,1-DICHLOROETHANE	75343	2.00E-001 P		1.40E-001 A		Y	9.0E+002 N	5.1E+002 N	2.7E+002 N	2.0E+005 N	1.6E+004 N	2.6E-001 5.1E+000 N
1,2-DICHLOROETHANE	107062		9.10E-002 I	7.00E-001 M	9.10E-002 I	Y	1.2E-001 C	6.9E-002 C	3.5E-002 C	3.1E+001 C	7.0E+000 C	5.2E-005 1.0E-003 C
1,1-DICHLOROETHENE	75354	5.00E-002 I		6.00E-002 I		Y	3.5E+002 N	2.2E+002 N	6.8E+001 N	5.1E+004 N	3.9E+003 N	1.5E-001 2.9E+000 N
**CIS-1,2-DICHLOROETHENE	156692	1.00E-002 P				Y	6.1E+001 N	3.7E+001 N	1.4E+001 N	1.0E+004 N	7.8E+002 N	
TRANS-1,2-DICHLOROETHENE	156605	2.00E-002 I				Y	1.2E+002 N	7.3E+001 N	2.7E+001 N	2.0E+004 N	1.6E+003 N	4.1E-002 8.2E-001 N
TOTAL 1,2-DICHLOROETHENE	540590	9.00E-003 H				Y	5.5E+001 N	3.3E+001 N	1.2E+001 N	9.2E+003 N	7.0E+002 N	1.9E-002 3.7E-001 N
2,4-DICHLOROPHENOL	120832	3.00E-003 I				Y	1.1E+002 N	1.1E+001 N	4.1E+000 N	3.1E+003 N	2.3E+002 N	6.0E-002 1.2E+000 N
2,4-D	94757	1.00E-002 I				Y	3.7E+002 N	3.7E+001 N	1.4E+001 N	1.0E+004 N	7.8E+002 N	4.5E-001 9.0E+000 N
4-(2,4-DICHLOROPHOXY)BUTYRIC ACID	94826	8E-003 I				Y	2.9E+002 N	2.9E+001 N	1.1E+001 N	8.2E+003 N	6.3E+002 N	
1,2-DICHLOROPROPANE	78875		6.80E-002 H	1.14E-003 I		Y	1.6E-001 C	9.2E-002 C	4.6E-002 C	4.2E+001 C	9.4E+000 C	1.0E-004 2.1E-003 C
**1,3-DICHLOROPROPANE	142289	2.00E-002 P				Y	1.2E+002 N	7.3E+001 N	2.7E+001 N	2.0E+004 N	1.6E+003 N	
2,3-DICHLOROPROPANOL	616239	3.00E-003 I				Y	1.1E+002 N	1.1E+001 N	4.1E+000 N	3.1E+003 N	2.3E+002 N	
1,3-DICHLOROPROPENE	542756	3.00E-002 I	1.00E-001 I	5.71E-003 I	1.00E-002 I	Y	4.4E-001 C	6.3E-001 C	3.2E-002 C	2.9E+001 C	6.4E+000 C	1.6E-004 3.1E-003 C
DICHLORVOS	62737	5E-004 I	0.29 I	1.43E-004 I			2.3E-001 C	2.2E-002 C	1.1E-002 C	9.9E+000 C	2.2E+000 C	5.5E-005 1.1E-003 C
DELDRIN	60571	5.00E-005 I	1.60E+001 I		1.60E+001 I		4.2E-003 C	3.9E-004 C	2.0E-004 C	1.8E-001 C	4.0E-002 C	1.1E-004 2.2E-003 C
DIESEL EMISSIONS					1.40E-003 I		5.1E+000 N					
DIETHYLPHthalATE	84662	8.00E-001 I					2.9E+004 N	2.9E+003 N	1.1E+003 N	8.2E+005 N	6.3E+004 N	2.3E+001 4.5E+002 N
DI(2-ETHYLHEXYL)ADIPATE	103231	6.00E-001 I	1.20E-003 I				5.6E+001 C	5.2E+000 C	2.6E+000 C	2.4E+003 C	5.3E+002 C	
DIETHYLSTILBESTROL	56531		4.70E+003 H				1.4E-005 C	1.3E-006 C	6.7E-007 C	6.1E-004 C	1.4E-004 C	
DIFENZOQUAT (AVENGE)	43222486	8.00E-002 I			1.10E+001 I	Y	2.9E+003 N	2.9E+002 N	1.1E+002 N	8.2E+004 N	6.3E+003 N	
1,1-DIFLUOROETHANE	75376					Y	8.0E+004 N	4.0E+004 N				
DIISOPROPYL METHYLPHOSPHONATE (DIMP)	1445756	8.00E-002 I				Y	2.9E+003 N	2.9E+002 N	1.1E+002 N	8.2E+004 N	6.3E+003 N	

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Chemical	CAS	RfDo mg/kg/d	CSFo 1/mg/kg/d	RfDi mg/kg/d	CSFi 1/mg/kg/d	VOC	Risk-based concentrations				Region III SSS		
							Tap water ug/l	Ambient air ug/m <sup>3</sup>	Fish mg/kg	Soil Industrial mg/kg	Residential mg/kg	Soil, for groundwater migration DAF 1 mg/kg	DAF 20 mg/kg
3,3'-DIMETHOXYBENZIDINE	119904		1.40E-002 H				4.8E+000 C	4.5E-001 C	2.3E-001 C	2.0E+002 C	4.6E+001 C		
N,N-DIMETHYLANILINE	121697	2.00E-003 I					7.3E+001 N	7.3E+000 N	2.7E+000 N	2.0E+003 N	1.6E+002 N		
2,4-DIMETHYLPHENOL	105679	2.00E-002 I					7.3E+002 N	7.3E+001 N	2.7E+001 N	2.0E+004 N	1.6E+003 N	3.4E-001	6.7E+000 N
2,6-DIMETHYLPHENOL	576261	6.00E-004 I					2.2E+001 N	2.2E+000 N	8.1E-001 N	6.1E+002 N	4.7E+001 N		
3,4-DIMETHYLPHENOL	95658	1.00E-003 I					3.7E+001 N	3.7E+000 N	1.4E+000 N	1.0E+003 N	7.8E+001 N		
**1,2-DINITROBENZENE	528290	1.00E-004 P					3.7E+000 N	3.7E-001 N	1.4E-001 N	1.0E+002 N	7.8E+000 N		
1,3-DINITROBENZENE	99650	1.00E-004 I					3.7E+000 N	3.7E-001 N	1.4E-001 N	1.0E+002 N	7.8E+000 N	1.8E-003	3.7E-002 N
**1,4-DINITROBENZENE	100254	1.00E-004 P					3.7E+000 N	3.7E-001 N	1.4E-001 N	1.0E+002 N	7.8E+000 N		
4,6-DINITRO-O-CYCLOHEXYL PHENOL	131895	2.00E-003 I					7.3E+001 N	7.3E+000 N	2.7E+000 N	2.0E+003 N	1.6E+002 N		
2,4-DINITROPHENOL	51285	2.00E-003 I					7.3E+001 N	7.3E+000 N	2.7E+000 N	2.0E+003 N	1.6E+002 N		
DINITROTOLUENE MIX			6.80E-001 I				9.8E-002 C	9.2E-003 C	4.6E-003 C	4.2E+000 C	9.4E-001 C		
2,4-DINITROTOLUENE	121142	2.00E-003 I					7.3E+001 N	7.3E+000 N	2.7E+000 N	2.0E+003 N	1.6E+002 N	2.9E-002	5.7E-001 N
2,6-DINITROTOLUENE	606202	1.00E-003 P					3.7E+001 N	3.7E+000 N	1.4E+000 N	1.0E+003 N	7.8E+001 N	1.2E-002	2.5E-001 N
DINOSEB	88857	1.00E-003 I					3.7E+001 N	3.7E+000 N	1.4E+000 N	1.0E+003 N	7.8E+001 N	8.7E-003	1.7E-001 N
1,4-DIOXANE	123911		1.10E-002 I				6.1E+000 C	5.7E-001 C	2.9E-001 C	2.6E+002 C	5.8E+001 C	1.3E-003	2.6E-002 C
DIPHENYLAMINE	122394	2.50E-002 I					9.1E+002 N	9.1E+001 N	3.4E+001 N	2.6E+004 N	2.0E+003 N	1.3E+000	2.5E+001 N
1,2-DIPHENYLHYDRAZINE	122667		8.00E-001 I				8.4E-002 C	7.8E-003 C	3.9E-003 C	3.6E+000 C	8.0E-001 C	1.3E-004	2.5E-003 C
DIQUAT	85007	2.20E-003 I					8.0E+001 N	8.0E+000 N	3.0E+000 N	2.2E+003 N	1.7E+002 N	1.7E-002	3.3E-001 N
DISULFOTON	298044	4.00E-005 I					1.5E+000 N	1.5E-001 N	5.4E-002 N	4.1E+001 N	3.1E+000 N	3.2E-003	6.4E-002 N
1,4-DITHIANE	505293	1.00E-002 I					3.7E+002 N	3.7E+001 N	1.4E+001 N	1.0E+004 N	7.8E+002 N		
DIURON	330541	2.00E-003 I					7.3E+001 N	7.3E+000 N	2.7E+000 N	2.0E+003 N	1.6E+002 N	5.8E-002	1.2E+000 N
ENDOSULFAN	115297	6.00E-003 I					2.2E+002 N	2.2E+001 N	8.1E+000 N	6.1E+003 N	4.7E+002 N	9.8E-001	2.0E+001 N
ENDRIN	72208	3.00E-004 I					1.1E+001 N	1.1E+000 N	4.1E-001 N	3.1E+002 N	2.3E+001 N	2.7E-001	5.4E+000 N
**EPICHLOROHYDRIN	106898	6.00E-003 P	9.90E-003 I	2.86E-004 I	4.20E-003 I	Y	2.1E+000 N	1.0E+000 N	3.2E-001 C	2.9E+002 C	6.5E+001 C	4.3E-004	8.6E-003 N
ETHION	563122	5.00E-004 I					1.8E+001 N	1.8E+000 N	6.8E-001 N	5.1E+002 N	3.9E+001 N	3.2E-001	6.4E+000 N
ETHYL ACETATE	141786	9.00E-001 I					5.5E+003 N	3.3E+003 N	1.2E+003 N	9.2E+005 N	7.0E+004 N	1.7E+000	3.5E+001 N
ETHYLBENZENE	100414	1.00E-001 I		2.90E-001 I		Y	1.3E+003 N	1.1E+003 N	1.4E+002 N	1.0E+005 N	7.8E+003 N	7.5E-001	1.5E+001 N
ETHYLENE GLYCOL	107211	2.00E+000 I					7.3E+004 N	7.3E+003 N	2.7E+003 N	2.0E+006 N	1.6E+005 N	1.5E+001	3.0E+002 N
ETHYLENE GLYCOL, MONOBUTYL ETHER	111762	5.00E-001 I		3.70E+000 I			1.8E+004 N	1.4E+004 N	6.8E+002 N	5.1E+005 N	3.9E+004 N		
ETHYLENE OXIDE	75218		1.00E+000 H		3.50E-001 H	Y	2.3E-002 C	1.8E-002 C	3.2E-003 C	2.9E+000 C	6.4E-001 C	4.8E-006	9.5E-005 C
ETHYL ETHER	60297	2.00E-001 I					1.2E+003 N	7.3E+002 N	2.7E+002 N	2.0E+005 N	1.6E+004 N	4.2E-001	8.5E+000 N
FENAMIPHOS	22224926	2.50E-004 I					9.1E+000 N	9.1E-001 N	3.4E-001 N	2.6E+002 N	2.0E+001 N	7.8E-003	1.6E-001 N
FLUOMETURON	2164172	1.30E-002 I					4.7E+002 N	4.7E+001 N	1.8E+001 N	1.3E+004 N	1.0E+003 N		
FLUORINE	7782414	6.00E-002 I					2.2E+003 N	2.2E+002 N	8.1E+001 N	6.1E+004 N	4.7E+003 N		
FOMESAFEN	72178020		1.90E-001 I				3.5E-001 C	3.3E-002 C	1.7E-002 C	1.5E+001 C	3.4E+000 C		
FONOFOS	944229	2.00E-003 I					7.3E+001 N	7.3E+000 N	2.7E+000 N	2.0E+003 N	1.6E+002 N	1.8E-001	3.5E+000 N
FORMALDEHYDE	50000	2.00E-001 I		4.50E-002 I		Y	7.3E+003 N	1.4E-001 C	2.7E+002 N	2.0E+005 N	1.6E+004 N	1.5E+000	3.0E+001 N
FURAN	110009	1.00E-003 I					6.1E+000 N	3.7E+000 N	1.4E+000 N	1.0E+003 N	7.8E+001 N	1.5E-003	3.0E-002 N
FURFURAL	98011	3.00E-003 I		1.00E-002 A			1.1E+002 N	3.7E+001 N	4.1E+000 N	3.1E+003 N	2.3E+002 N	2.3E-002	4.6E-001 N
GLYPHOSATE	1071836	1.00E-001 I					3.7E+003 N	3.7E+002 N	1.4E+002 N	1.0E+005 N	7.8E+003 N	2.6E+001	5.3E+002 N
HEPTACHLOR	76448	5.00E-004 I	4.50E+000 I		4.50E+000 I		1.5E-002 C	1.4E-003 C	7.0E-004 C	6.4E-001 C	1.4E-001 C	4.2E-002	8.4E-001 C
HEPTACHLOR ÉPOXIDE	1024573	1.30E-005 I	9.10E+000 I		9.10E+000 I		7.4E-003 C	6.9E-004 C	3.5E-004 C	3.1E-001 C	7.0E-002 C	1.2E-003	2.5E-002 C
HEXA BROMOBENZENE	87821	2.00E-003 I					7.3E+001 N	7.3E+000 N	2.7E+000 N	2.0E+003 N	1.6E+002 N		
HEXA CHLOROBENZENE	118741	8.00E-004 I	1.60E+000 I		1.60E+000 I		4.2E-002 C	3.9E-003 C	2.0E-003 C	1.8E+000 C	4.0E-001 C	2.6E-003	5.2E-002 C
HEXA CHLOROBUTADIENE	87683	2.00E-004 H	7.80E-002 I		7.80E-002 I		8.6E-001 C	8.0E-002 C	4.0E-002 C	3.7E+001 C	8.2E+000 C	9.2E-002	1.8E+000 C

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Chemical	CAS	RfDo	CSFo	RfDi	CSFi	VOC	Tap water ug/l	Ambient air ug/m <sup>3</sup>	Fish mg/kg	Soil Industrial mg/kg	Residential mg/kg	DAF 1 mg/kg	DAF 20 mg/kg		
		mg/kg/d	1/mg/kg/d	mg/kg/d	1/mg/kg/d										
ALPHA-HCH	319846		6.30E+000 I		6.30E+000 I		1.1E-002 C	9.9E-004 C	5.0E-004 C	4.5E-001 C	1.0E-001 C	4.5E-005	8.9E-004		
BETA-HCH	319857		1.80E+000 I		1.80E+000 I		3.7E-002 C	3.5E-003 C	1.8E-003 C	1.6E+000 C	3.5E-001 C	1.6E-004	3.1E-003		
GAMMA-HCH (LINDANE)	58899	3.00E-004 I	1.30E+000 H				5.2E-002 C	4.8E-003 C	2.4E-003 C	2.2E+000 C	4.9E-001 C	2.2E-004	4.3E-003		
TECHNICAL HCH	608731		1.80E+000 I		1.80E+000 I		3.7E-002 C	3.5E-003 C	1.8E-003 C	1.6E+000 C	3.5E-001 C				
HEXAChLOROCYCLOPENTADIENE	77474	6.00E-003 I		5.7E-005 I			2.2E+002 N	2.1E-001 N	8.1E+000 N	6.1E+003 N	4.7E+002 N				
HEXAChLORODIBENZODIOXIN MIX	19408743		6.20E+003 I		4.55E+003 I		1.1E-005 C	1.4E-006 C	5.1E-007 C	4.6E-004 C	1.0E-004 C				
HEXAChLOROETHANE	67721	1.00E-003 I	1.40E-002 I		1.40E-002 I		4.8E+000 C	4.5E-001 C	2.3E-001 C	2.0E+002 C	4.6E+001 C				
HEXAChLOROPHENe	70304	3.00E-004 I					1.1E+001 N	1.1E+000 N	4.1E-001 N	3.1E+002 N	2.3E+001 N				
1,6-HEXAMETHYLENE DIISOCYANATE	822060			2.90E-006 I			1.1E-002 N								
HEXANE	110543			2.00E-001 I		y	1.5E+003 N	7.3E+002 N							
HMX	2691410	5.00E-002 I					1.8E+003 N	1.8E+002 N	6.8E+001 N	5.1E+004 N	3.9E+003 N				
HYDRAZINE	302012		3.00E+000 I		1.70E+001 I		2.2E-002 C	3.7E-004 C	1.1E-003 C	9.5E-001 C	2.1E-001 C				
HYDROGEN CHLORIDE	7647010			5.70E-003 I			2.1E+001 N								
HYDROGEN SULFIDE	7783064	3.00E-003 I		5.7E-004 I			1.1E+002 N	2.1E+000 N	4.1E+000 N	3.1E+003 N	2.3E+002 N				
IRON	7439896	3.00E-001 E					1.1E+004 N	1.1E+003 N	4.1E+002 N	3.1E+005 N	2.3E+004 N				
ISOBUTANOL	78831	3.00E-001 I					y	1.8E+003 N	1.1E+003 N	4.1E+002 N	3.1E+005 N	2.3E+004 N			
ISOPHORONE	78591	2.00E-001 I	9.50E-004 I				7.0E+001 C	6.6E+000 C	3.3E+000 C	3.0E+003 C	6.7E+002 C				
TETRAETHYLLeAD	78002	1.00E-007 I					3.7E-003 N	3.7E-004 N	1.4E-004 N	1.0E-001 N	7.8E-003 N	4.6E-005	9.2E-004		
**KEPONE	- 143500	5.00E-004 M					1.8E+001 N	1.8E+000 N	6.8E-001 N	5.1E+002 N	3.9E+001 N				
LITHIUM	7439932	2.00E-002 E					7.3E+002 N	7.3E+001 N	2.7E+001 N	2.0E+004 N	1.6E+003 N				
MALATHION	121755	2.00E-002 I					7.3E+002 N	7.3E+001 N	2.7E+001 N	2.0E+004 N	1.6E+003 N				
MALEIC ANHYDRIDE	108316	1.00E-001 I					3.7E+003 N	3.7E+002 N	1.4E+002 N	1.0E+005 N	7.8E+003 N				
MANGANESE-NONFOOD	7439965	2.00E-002 I		1.43E-005 I			7.3E+002 N	5.2E-002 N	2.7E+001 N	2.0E+004 N	1.6E+003 N				
MANGANESE-FOOD	7439965	1.40E-001 I		1.43E-005 I			5.1E+003 N	5.2E-002 N	1.9E+002 N	1.4E+005 N	1.1E+004 N				
MEPHOSFOLAN	950107	9.00E-005 H					3.3E+000 N	3.3E-001 N	1.2E-001 N	9.2E+001 N	7.0E+000 N				
MEPIQUAT CHLORIDE	24307264	3.00E-002 I					1.1E+003 N	1.1E+002 N	4.1E+001 N	3.1E+004 N	2.3E+003 N				
MERCURIC CHLORIDE	7487947	3.00E-004 I					1.1E+001 N	1.1E+000 N	4.1E-001 N	3.1E+002 N	2.3E+001 N				
MERCURY (elemental)	7439976			8.60E-005 I				3.1E-001 N							
METHYLmERCURY	22967926	1.00E-004 I					3.7E+000 N	3.7E-001 N	1.4E-001 N	1.0E+002 N	7.8E+000 N				
METHANOL	67561	5.00E-001 I					1.8E+004 N	1.8E+003 N	6.8E+002 N	5.1E+005 N	3.9E+004 N				
METHIDATHION	950378	1.00E-003 I					3.7E+001 N	3.7E+000 N	1.4E+000 N	1.0E+003 N	7.8E+001 N				
METHOXYCHLOR	72435	5.00E-003 I					1.8E+002 N	1.8E+001 N	6.8E+000 N	5.1E+003 N	3.9E+002 N				
METHYL ACETATE	79209	1.00E+000 H				y	6.1E+003 N	3.7E+003 N	1.4E+003 N	1.0E+006 N	7.8E+004 N				
METHYL ACRYLATE	96333	3.00E-002 A				y	1.8E+002 N	1.1E+002 N	4.1E+001 N	3.1E+004 N	2.3E+003 N				
2-METHYL-1-ANILINE	95534		2.40E-001 H			y	2.8E-001 C	2.6E-002 C	1.3E-002 C	1.2E+001 C	2.7E+000 C				
4-(2-METHYL-4-CHLOROPHENOXO) BUTYRIC ACID	94815	1.00E-002 I				y	3.7E+002 N	3.7E+001 N	1.4E+001 N	1.0E+004 N	7.8E+002 N				
2-METHYL-4-CHLOROPHENOXACETIC ACID (MCPA)	94746	5.00E-004 I				y	1.8E+001 N	1.8E+000 N	6.8E-001 N	5.1E+002 N	3.9E+001 N				
2-(2-METHYL-4-CHLOROPHENOXO)PROPINIC ACID (MCPP)	93652	1.00E-003 I				y	3.7E+001 N	3.7E+000 N	1.4E+000 N	1.0E+003 N	7.8E+001 N				
METHYLCYCLOHEXANE	108872			8.60E-001 H		y	6.3E+003 N	3.1E+003 N							
METHYLENE BROMIDE	74953	1.00E-002 A				y	6.1E+001 N	3.7E+001 N	1.4E+001 N	1.0E+004 N	7.8E+002 N				
METHYLENE CHLORIDE	75092	6.00E-002 I	7.50E-003 I	3.00E-001 M	1.65E-003 I	y	4.1E+000 C	3.8E+000 C	4.2E+001 C	3.8E+002 C	8.5E+001 C				
**4,4'-METHYLENE BIS(2-CHLOROANILINE)	m	101144	2.00E-003 P	1.00E-001 P	1.30E-001 H	y	2.0E-001 C	1.5E-002 C	3.2E-002 C	2.9E+001 C	1.6E+000 C				
4,4'-METHYLENE BIS(N,N'-DIMETHYL)ANILINE	101611			4.60E-002 I			1.5E+000 C	1.4E-001 C	6.9E-002 C	6.2E+001 C	1.4E+001 C				
4,4'-METHYLENEDIPHENYL ISOCYANATE	101688			1.7E-004 I				6.2E-001 N							
METHYLETHYL KETONE (2-BUTANONE)	78933	6.00E-001 I		1.40E+000 I		y	7.0E+003 N	5.1E+003 N	8.1E+002 N	6.1E+005 N	4.7E+004 N				

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Chemical	CAS	RfDo mg/kg/d	CSFo 1/mg/kg/d	RfDi mg/kg/d	CSFi 1/mg/kg/d	VOC	Risk-based concentrations				Region III SSIs		
							Tap water ug/l	Ambient air ug/m <sup>3</sup>	Fish mg/kg	Soil Industrial mg/kg	Residential mg/kg	DAF 1 mg/kg	DAF 20 mg/kg
METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	108101			8.60E-001 I		y	6.3E+003 N	3.1E+003 N				2.9E+000	5.9E+001 N
METHYL METHACRYLATE	80626	1.40E+000 I		2.00E-001 I		y	1.4E+003 N	7.3E+002 N	1.9E+003 N	1.4E+006 N	1.1E+005 N	3.2E-001	6.5E+000 N
METHYL PARATHION	298000	2.50E-004 I					9.1E+000 N	9.1E-001 N	3.4E-001 N	2.6E+002 N	2.0E+001 N	4.3E-003	8.5E-002 N
2-METHYLPHENOL	95487	5.00E-002 I					1.8E+003 N	1.8E+002 N	6.8E+001 N	5.1E+004 N	3.9E+003 N		
3-METHYLPHENOL	108394	5.00E-002 I					1.8E+003 N	1.8E+002 N	6.8E+001 N	5.1E+004 N	3.9E+003 N		
4-METHYLPHENOL	106445	5.00E-003 H					1.8E+002 N	1.8E+001 N	6.8E+000 N	5.1E+003 N	3.9E+002 N		
METHYLSTYRENE MIX	25013154	6.00E-003 A		1.00E-002 A		y	5.5E+001 N	3.7E+001 N	8.1E+000 N	6.1E+003 N	4.7E+002 N	5.1E-002	1.0E+000 N
ALPHA-METHYLSTYRENE	98839	7.00E-002 A					4.3E+002 N	2.6E+002 N	9.5E+001 N	7.2E+004 N	5.5E+003 N	4.0E-001	7.9E+000 N
METHYL TERT-BUTYL ETHER	1634044		4.00E-003 O	8.57E-001 I		y	2.6E+000 C	1.6E+000 C	7.9E-001 C	7.2E+002 C	1.6E+002 C	5.9E-004	1.2E-002 C
METOLACHLOR (DUAL)	51218452	1.50E-001 I					5.5E+003 N	5.5E+002 N	2.0E+002 N	1.5E+005 N	1.2E+004 N		
MIREX	2385855	2.00E-004 I					7.3E+000 N	7.3E-001 N	2.7E-001 N	2.0E+002 N	1.6E+001 N		
MOLYBDENUM	7439987	5E-003 I					1.8E+002 N	1.8E+001 N	6.8E+000 N	5.1E+003 N	3.9E+002 N		
MONOCHLORAMINE	10599903	1E-001 I		1.00E-001 H			3.7E+003 N	3.7E+002 N	1.4E+002 N	1.0E+005 N	7.8E+003 N		
NALED	300765	2E-003 I					7.3E+001 N	7.3E+000 N	2.7E+000 N	2.0E+003 N	1.6E+002 N		
NICKEL REFINERY DUST						8.4E-001 I			7.5E-003 C				
NICKEL	7440020	2.00E-002 I					7.3E+002 N	7.3E+001 N	2.7E+001 N	2.0E+004 N	1.6E+003 N		
NITRATE	14797558	1.60E+000 I					5.8E+004 N	5.8E+003 N	2.2E+003 N	1.6E+006 N	1.3E+005 N		
NITRITE	14797650	1.00E-001 I					3.7E+003 N	3.7E+002 N	1.4E+002 N	1.0E+005 N	7.8E+003 N		
NITROBENZENE	98953	5.00E-004 I		6.00E-004 A		y	3.5E+000 N	2.2E+000 N	6.8E-001 N	5.1E+002 N	3.9E+001 N	1.2E-003	2.3E-002 N
**NITROGLYCERIN	55630	1.7E-002 P					6.2E+002 N	6.2E+001 N	2.3E+001 N	1.7E+004 N	1.3E+003 N		
2-NITROPROPANE	79469		5.70E-003 I	9.40E+000 H	y		1.3E-003 C	6.7E-004 C				3.2E-007	6.4E-006 C
N-NITROSO-DI-N-BUTYLAMINE	924163		5.40E+000 I		5.60E+000 I	y	1.9E-003 C	1.1E-003 C	5.8E-004 C	5.3E-001 C	1.2E-001 C	1.4E-006	2.7E-005 C
N-NITROSODIETHANOLAMINE	1116547		2.80E+000 I				2.4E-002 C	2.2E-003 C	1.1E-003 C	1.0E+000 C	2.3E-001 C		
N-NITROSODIETHYLAMINE	55185		1.50E+002 I		1.50E+002 I		4.5E-004 C	4.2E-005 C	2.1E-005 C	1.9E-002 C	4.3E-003 C	1.1E-007	2.3E-006 C
N-NITROSODIMETHYLAMINE	62759		5.10E+001 I		5.10E+001 I		1.3E-003 C	1.2E-004 C	6.2E-005 C	5.6E-002 C	1.3E-002 C	2.8E-007	5.7E-006 C
N-NITROSDIPHENYLAMINE	86306		4.90E-003 I				1.4E+001 C	1.3E+000 C	6.4E-001 C	5.8E+002 C	1.3E+002 C	3.8E-002	7.6E-001 C
N-NITROSDIOPROPYLAMINE	621647		7.00E+000 I				9.6E-003 C	8.9E-004 C	4.5E-004 C	4.1E-001 C	9.1E-002 C	2.4E-006	4.7E-005 C
N-NITROSO-N-METHYLETHYLAMINE	10595956		2.20E+001 I				3.0E-003 C	2.8E-004 C	1.4E-004 C	1.3E-001 C	2.9E-002 C		
N-NITROSPYRRROLIDINE	930552		2.10E+000 I		2.10E+000 I		3.2E-002 C	3.0E-003 C	1.5E-003 C	1.4E+000 C	3.0E-001 C		
O-NITROTOLUENE	88722	1.00E-002 H				y	6.1E+001 N	3.7E+001 N	1.4E+001 N	1.0E+004 N	7.8E+002 N		
NUSTAR	85509199	7.00E-004 I					2.6E+001 N	2.6E+000 N	9.5E-001 N	7.2E+002 N	5.5E+001 N		
ORYZALIN	19044883	5.00E-002 I					1.8E+003 N	1.8E+002 N	6.8E+001 N	5.1E+004 N	3.9E+003 N		
OXADIAZON	19666309	5.00E-003 I					1.8E+002 N	1.8E+001 N	6.8E+000 N	5.1E+003 N	3.9E+002 N		
OXAMYL	23135220	2.50E-002 I					9.1E+002 N	9.1E+001 N	3.4E+001 N	2.6E+004 N	2.0E+003 N	1.9E-001	3.8E+000 N
OXYFLUORFEN	42874033	3.00E-003 I					1.1E+002 N	1.1E+001 N	4.1E+000 N	3.1E+003 N	2.3E+002 N		
PARAQUAT DICHLORIDE	1910425	4.50E-003 I					1.6E+002 N	1.6E+001 N	6.1E+000 N	4.6E+003 N	3.5E+002 N		
PARATHION	56382	6.00E-003 H					2.2E+002 N	2.2E+001 N	8.1E+000 N	6.1E+003 N	4.7E+002 N	5.0E-001	1.0E+001 N
PENTACHLOROBENZENE	608935	8.00E-004 I					2.9E+001 N	2.9E+000 N	1.1E+000 N	8.2E+002 N	6.3E+001 N	1.0E+000	2.0E+001 N
PENTACHLORONITROBENZENE	82688	3.00E-003 I	2.60E-001 H				2.6E-001 C	2.4E-002 C	1.2E-002 C	1.1E+001 C	2.5E+000 C	4.1E-003	8.2E-002 C
PENTACHLOROPHENOL	87865	3.00E-002 I	1.20E-001 I				5.6E-001 C	5.2E-002 C	2.6E-002 C	2.4E+001 C	5.3E+000 C		
PERCHLORATE		7.00E-004 I					2.6E+001 N	2.6E+000 N	9.5E-001 N	7.2E+002 N	5.5E+001 N		
PERMETHRIN	52645531	5.00E-002 I					1.8E+003 N	1.8E+002 N	6.8E+001 N	5.1E+004 N	3.9E+003 N	1.2E+002	2.4E+003 N
PHENOL	108952	3.00E-001 I					1.1E+004 N	1.1E+003 N	4.1E+002 N	3.1E+005 N	2.3E+004 N	3.3E+000	6.7E+001 N
M-PHENYLENEDIAMINE	108452	6.00E-003 I					2.2E+002 N	2.2E+001 N	8.1E+000 N	6.1E+003 N	4.7E+002 N	4.9E-002	9.8E-001 N
O-PHENYLENEDIAMINE	95545		4.70E-002 H				1.4E+000 C	1.3E-001 C	6.7E-002 C	6.1E+001 C	1.4E+001 C		

Sources: I = IRIS H = HEAST A = HEAST Alternate M = ATSDR MRL (chronic) E = EPA-NCEA provisional value O = other P = EPA provisional peer-reviewed m = Default ADAs applied, carcinogenic via mutagenic mode of action							Basis: C = Carcinogenic effects N = Noncarcinogenic effects I = RBC at HI of 0.1 < RBC-c; see Alternate RBCs II = See Alternate RBCs					Region III SSLs	
Chemical	CAS	RfDo mg/kg/d	CSFo 1/mg/kg/d	RfDi mg/kg/d	CSFi 1/mg/kg/d	VOC	Tap water ug/l	Ambient air ug/m3	Fish mg/kg	Soil Industrial mg/kg	Residential mg/kg	Soil, for groundwater migration	
												DAF 1 mg/kg	DAF 20 mg/kg
P-PHENYLENEDIAMINE	106503	1.90E-001 H					6.9E+003 N	6.9E+002 N	2.6E+002 N	1.9E+005 N	1.5E+004 N		
PHOSGENE	75445			8.6E-005 I			6.3E-001 N	3.1E-001 N					
PHOSPHINE	7803512	3.00E-004 I		8.60E-005 I			1.1E+001 N	3.1E-001 N	4.1E-001 N	3.1E+002 N	2.3E+001 N		
PHOSPHORIC ACID	7664382			2.90E-003 I				1.1E+001 N					
PHOSPHORUS (WHITE)	7723140	2.00E-005 I					7.3E-001 N	7.3E-002 N	2.7E-002 N	2.0E+001 N	1.6E+000 N		
PHTHALIC ANHYDRIDE	85449	2.00E+000 I			3.43E-002 H		7.3E+004 N	1.3E+002 N	2.7E+003 N	2.0E+006 N	1.6E+005 N	2.6E+001	5.2E+002 N
POLYBROMINATED BIPHENYLS		7.00E-006 H	8.90E+000 H				7.5E-003 C	7.0E-004 C	3.5E-004 C	3.2E-001 C	7.2E-002 C	I	
POLYCHLORINATED BIPHENYLS	1336363		2.00E+000 I		2.00E+000 I		3.3E-002 C	3.1E-003 C	1.6E-003 C	1.4E+000 C	3.2E-001 C		2.1E-002 4.1E-001 C
AROCLOR-1016	12674112	7.00E-005 I	7.00E-002 I		7.00E-002 I		9.6E-001 C	8.9E-002 C	4.5E-002 C	4.1E+001 C	5.5E+000 N		2.1E-001 4.2E+000 C
AROCLOR-1221	11104282		2.00E+000 I		2.00E+000 I		3.3E-002 C	3.1E-003 C	1.6E-003 C	1.4E+000 C	3.2E-001 C		
AROCLOR-1232	11141165		2.00E+000 I		2.00E+000 I		3.3E-002 C	3.1E-003 C	1.6E-003 C	1.4E+000 C	3.2E-001 C		
AROCLOR-1242	53469219		2.00E+000 I		2.00E+000 I		3.3E-002 C	3.1E-003 C	1.6E-003 C	1.4E+000 C	3.2E-001 C		
AROCLOR-1248	12672296		2.00E+000 I		2.00E+000 I		3.3E-002 C	3.1E-003 C	1.6E-003 C	1.4E+000 C	3.2E-001 C		
AROCLOR-1254	11097691	2.00E-005 I	2.00E+000 I		2.00E+000 I		3.3E-002 C	3.1E-003 C	1.6E-003 C	1.4E+000 C	3.2E-001 C	I	5.4E-002 1.1E+000 C
AROCLOR-1260	11096825			2.00E+000 I		2.00E+000 I	3.3E-002 C	3.1E-003 C	1.6E-003 C	1.4E+000 C	3.2E-001 C		
POLYNUCLEAR AROMATIC HYDROCARBONS:													
ACENAPHTHENE	83329	6.00E-002 I					3.7E+002 N	2.2E+002 N	8.1E+001 N	6.1E+004 N	4.7E+003 N		5.2E+000 1.0E+002 N
ANTHRACENE	120127	3.00E-001 I					1.8E+003 N	1.1E+003 N	4.1E+002 N	3.1E+005 N	2.3E+004 N		2.3E+001 4.7E+002 N
**BENZ[A]ANTHRACENE	m	56553		7.30E-001 E			3.0E-002 C	3.0E-003 C	4.3E-003 C	3.9E+000 C	2.2E-001 C		2.4E-002 4.8E-001 C
**BENZO[B]FLUORANTHENE	m	205992		7.30E-001 E			3.0E-002 C	3.0E-003 C	4.3E-003 C	3.9E+000 C	2.2E-001 C		7.4E-002 1.5E+000 C
**BENZO[K]FLUORANTHENE	m	207089		7.30E-002 E			3.0E-001 C	3.0E-002 C	4.3E-002 C	3.9E+001 C	2.2E+000 C		7.4E-001 1.5E+001 C
**BENZO[A]PYRENE	m	50328		7.30E+000 I		3.10E+000 E	3.0E-003 C	6.0E-004 C	4.3E-004 C	3.9E-001 C	2.2E-002 C		6.1E-003 1.2E-001 C
CARBAZOLE		86748		2.00E-002 H			3.3E+000 C	3.1E-001 C	1.6E-001 C	1.4E+002 C	3.2E-001 C		2.3E-002 4.7E-001 C
**CHRYSENE	m	218019		7.30E-003 E			3.0E+000 C	3.0E-001 C	4.3E-001 C	3.9E+002 C	2.2E+001 C		2.4E+000 4.8E+001 C
**DIBENZ[A,H]ANTHRACENE	m	53703		7.30E+000 E			3.0E-003 C	3.0E-004 C	4.3E-004 C	3.9E-001 C	2.2E-002 C		2.3E-002 4.6E-001 C
FLUORANTHENE		206440	4.00E-002 I				1.5E+003 N	1.5E+002 N	5.4E+001 N	4.1E+004 N	3.1E+003 N		3.1E+002 6.3E+003 N
FLUORENE		66737	4.00E-002 I				2.4E+002 N	1.5E+002 N	5.4E+001 N	4.1E+004 N	3.1E+003 N		6.8E+000 1.4E+002 N
**INDENO[1,2,3-C,D]PYRENE	m	193395		7.30E-001 E			3.0E-002 C	3.0E-003 C	4.3E-003 C	3.9E+000 C	2.2E-001 C		2.1E-001 4.2E+000 C
2-METHYLNAPHTHALENE		91576	4.00E-003 I				2.4E+001 N	1.5E+001 N	5.4E+000 N	4.1E+003 N	3.1E+002 N		2.2E-001 4.4E+000 N
NAPHTHALENE		91203	2.00E-002 I		9.00E-004 I		6.5E+000 N	3.3E+000 N	2.7E+001 N	2.0E+004 N	1.6E+003 N		7.7E-003 1.5E-001 N
PYRENE		129000	3.00E-002 I				1.8E+002 N	1.1E+002 N	4.1E+001 N	3.1E+004 N	2.3E+003 N		3.4E+001 6.8E+002 N
PROMETON		1610180	1.50E-002 I				5.5E+002 N	5.5E+001 N	2.0E+001 N	1.5E+004 N	1.2E+003 N		
PROMETRYN		7287196	4.00E-003 I				1.5E+002 N	1.5E+001 N	5.4E+000 N	4.1E+003 N	3.1E+002 N		
PROPACHLOR		1918167	1.30E-002 I				4.7E+002 N	4.7E+001 N	1.8E+001 N	1.3E+004 N	1.0E+003 N		
PROPARGITE		2312358	2.00E-002 I				7.3E+002 N	7.3E+001 N	2.7E+001 N	2.0E+004 N	1.6E+003 N		
PROPYLENE GLYCOL, MONOETHYL ETHER		52125538	7.00E-001 H				2.6E+004 N	2.6E+003 N	9.5E+002 N	7.2E+005 N	5.5E+004 N		
PROPYLENE GLYCOL, MONOMETHYL ETHER		107982	7.00E-001 H		5.70E-001 I		2.6E+004 N	2.1E+003 N	9.5E+002 N	7.2E+005 N	5.5E+004 N		
PURSUIT		81335775	2.50E-001 I				9.1E+003 N	9.1E+002 N	3.4E+002 N	2.6E+005 N	2.0E+004 N		
PYRIDINE		110861	1.00E-003 I				3.7E+001 N	3.7E+000 N	1.4E+000 N	1.0E+003 N	7.8E+001 N		
QUINOLINE		91225		3.00E+000 I			2.2E-002 C	2.1E-003 C	1.1E-003 C	9.5E-001 C	2.1E-001 C		
RDX		121824	3.00E-003 I	1.10E-001 I			6.1E-001 C	5.7E-002 C	2.9E-002 C	2.6E+001 C	5.8E+000 C		
RESMETHRIN		10453868	3.00E-002 I				1.1E+003 N	1.1E+002 N	4.1E+001 N	3.1E+004 N	2.3E+003 N		
ROTENONE		83794	4.00E-003 I				1.5E+002 N	1.5E+001 N	5.4E+000 N	4.1E+003 N	3.1E+002 N		
SELENIUM		7782492	5.00E-003 I				1.8E+002 N	1.8E+001 N	6.8E+000 N	5.1E+003 N	3.9E+002 N		9.5E-001 1.9E+001 N
SILVER		7440224	5.00E-003 I				1.8E+002 N	1.8E+001 N	6.8E+000 N	5.1E+003 N	3.9E+002 N		1.6E+000 3.1E+001 N

Chemical	CAS						Basis: C = Carcinogenic effects N = Noncarcinogenic effects I = RBC at HI of 0.1 < RBC-C; see Alternate RBCs - II = See Alternate RBCs					Region III SSLs	
		RfDo mg/kg/d	CSFo 1/mg/kg/d	RfDi mg/kg/d	CSFi 1/mg/kg/d	VOC	Tap water ug/l	Ambient air ug/m3	Fish mg/kg	Soil Industrial mg/kg	Residential mg/kg	DAF 1 mg/kg	DAF 20 mg/kg
SIMAZINE	122349	5.00E-003 I	1.20E-001 H				5.6E-001 C	5.2E-002 C	2.6E-002 C	2.4E+001 C	5.3E+000 C	1.7E-004	3.3E-003 C
SODIUM DIETHYLDITHIOCARBAMATE	148185	3.00E-002 I	2.70E-001 H				2.5E-001 C	2.3E-002 C	1.2E-002 C	1.1E+001 C	2.4E+000 C		
STRONTIUM, STABLE	7440246	6.00E-001 I					2.2E+004 N	2.2E+003 N	8.1E+002 N	6.1E+005 N	4.7E+004 N	7.7E+002	1.5E+004 N
STRYCHNINE	57249	3.00E-004 I					1.1E+001 N	1.1E+000 N	4.1E-001 N	3.1E+002 N	2.3E+001 N	8.3E-003	1.7E-001 N
STYRENE	100425	2.00E-001 I		2.86E-001 I		y	1.6E+003 N	1.0E+003 N	2.7E+002 N	2.0E+005 N	1.6E+004 N	2.9E+000	5.7E+001 N
2,3,7,8-TETRACHLORODIBENZODIOXIN	1746016		1.50E+005 H		1.50E+005 H	y	4.5E-007 C	4.2E-008 C	2.1E-008 C	1.9E-005 C	4.3E-006 C	4.3E-007	8.6E-006 C
1,2,4,5-TETRACHLOROBENZENE	85943	3.00E-004 I					1.1E+001 N	1.1E+000 N	4.1E-001 N	3.1E+002 N	2.3E+001 N	3.3E-002	6.6E-001 N
1,1,1,2-TETRACHLOROETHANE	630206	3.00E-002 I	2.60E-002 I		2.60E-002 I	y	4.1E-001 C	2.4E-001 C	1.2E-001 C	1.1E+002 C	2.5E+001 C	2.0E-004	4.0E-003 C
1,1,2,2-TETRACHLOROETHANE	79345	4.00E-002 M	2.00E-001 I		2.00E-001 I	y	5.3E-002 C	3.1E-002 C	1.6E-002 C	1.4E+001 C	3.2E+000 C	3.4E-005	6.8E-004 C
TETRACHLOROETHENE	127184	1.00E-002 I	5.4E-001 O	8.0E-002 M	2.00E-002 O	y	1.0E-001 C	3.1E-001 C	5.8E-003 C	5.3E+000 C	1.2E+000 C	2.3E-004	4.7E-003 C
2,3,4,6-TETRACHLOROPHENOL	58902	3.00E-002 I					1.1E+003 N	1.1E+002 N	4.1E+001 N	3.1E+004 N	2.3E+003 N		
P,A,A-TETRACHLOROTOLUENE	5216251		2.00E+001 H				3.3E-003 C	3.1E-004 C	1.6E-004 C	1.4E-001 C	3.2E-002 C		
1,1,1,2-TETRAFLUOROETHANE	811972			2.29E+001 I		y	1.7E+005 N	8.4E+004 N					
TETRAHYDROFURAN	109999	2.00E-001 E	7.6E-003 E	8.6E-002 E	6.8E-003 E		8.8E+000 C	9.2E-001 C	4.2E-001 C	3.8E+002 C	8.4E+001 C		
TETRYL	479458	4.00E-003 P					1.5E+002 N	1.5E+001 N	5.4E+000 N	4.1E+003 N	3.1E+002 N		
THALLIUM	7440280	7.00E-005 O					2.6E+000 N	2.6E-001 N	9.5E-002 N	7.2E+001 N	5.5E+000 N	1.8E-001	3.6E+000 N
THALLIUM ACETATE	563688	9.00E-005 I					3.3E+000 N	3.3E-001 N	1.2E-001 N	9.2E+001 N	7.0E+000 N		
THALLIUM CARBONATE	6533739	8.00E-005 I					2.9E+000 N	2.9E-001 N	1.1E-001 N	8.2E+001 N	6.3E+000 N		
THALLIUM CHLORIDE	7791120	8.00E-005 I					2.9E+000 N	2.9E-001 N	1.1E-001 N	8.2E+001 N	6.3E+000 N		
THALLIUM NITRATE	10102451	9.00E-005 I					3.3E+000 N	3.3E-001 N	1.2E-001 N	9.2E+001 N	7.0E+000 N		
THALLIUM SULFATE (2:1)	7446186	8.00E-005 I					2.9E+000 N	2.9E-001 N	1.1E-001 N	8.2E+001 N	6.3E+000 N		
THIOBENCARB	28249776	1.00E-002 I					3.7E+002 N	3.7E+001 N	1.4E+001 N	1.0E+004 N	7.8E+002 N		
TIN	7440315	6.00E-001 H					2.2E+004 N	2.2E+003 N	8.1E+002 N	6.1E+005 N	4.7E+004 N		
TOLUENE	108883	8.00E-002 I		1.40E+000 I		y	2.3E+003 N	5.1E+003 N	1.1E+002 N	8.2E+004 N	6.3E+003 N	1.3E+000	2.7E+001 N
TOLUENE-2,4-DIAMINE	95807		3.20E+000 H				2.1E-002 C	2.0E-003 C	9.9E-004 C	8.9E-001 C	2.0E-001 C		
TOLUENE-2,5-DIAMINE	95705	6.00E-001 H					2.2E+004 N	2.2E+003 N	8.1E+002 N	6.1E+005 N	4.7E+004 N		
TOLUENE-2,6-DIAMINE	8234025	3.00E-002 P					1.1E+003 N	1.1E+002 N	4.1E+001 N	3.1E+004 N	2.3E+003 N		
P-TOLUIDINE	106490		1.90E-001 H				3.5E-001 C	3.3E-002 C	1.7E-002 C	1.5E+001 C	3.4E+000 C	3.0E-004	5.9E-003 C
TOXAPHENE	8001352		1.10E+000 I		1.10E+000 I		6.1E-002 C	5.7E-003 C	2.9E-003 C	2.6E+000 C	5.8E-001 C	3.1E-002	6.3E-001 C
1,2,4-TRIBROMOBENZENE	615543	5.00E-003 I					1.8E+002 N	1.8E+001 N	6.8E+000 N	5.1E+003 N	3.9E+002 N		
TRIBUTYLtin OXIDE	56359	3.00E-004 I					1.1E+001 N	1.1E+000 N	4.1E-001 N	3.1E+002 N	2.3E+001 N		
2,4,6-TRICHLOROANILINE	634935		3.40E-002 H				2.0E+000 C	1.8E-001 C	9.3E-002 C	8.4E+001 C	1.9E+001 C	1.2E-001	2.4E+000 N
1,2,4-TRICHLOROBENZENE	120821	1.00E-002 I				y	6.1E+001 N	3.7E+001 N	1.4E+001 N	1.0E+004 N	7.8E+002 N		
1,1,1-TRICHLOROETHANE	71556	2.80E-001 E				y	1.7E+003 N	1.0E+003 N	3.6E+002 N	2.9E+005 N	2.2E+004 N	1.6E+000	3.2E+001 N
1,1,2-TRICHLOROETHANE	79005	4.00E-003 I	5.70E-002 I		5.60E-002 I	y	1.9E-001 C	1.1E-001 C	5.5E-002 C	5.0E+001 C	1.1E+001 C	3.9E-005	7.8E-004 C
TRICHLOROETHENE	79016	3.00E-004 E	4.00E-001 E	1.00E-002 E	4.00E-001 E	y	2.6E-002 C	1.6E-002 C	7.9E-003 C	7.2E+000 C	1.6E+000 C	1.3E-005	2.6E-004 C
TRICHLOROFLUOROMETHANE	75694	3.00E-001 I		2.00E-001 A		y	1.3E+003 N	7.3E+002 N	4.1E+002 N	3.1E+005 N	2.3E+004 N	1.1E+000	2.3E+001 N
2,4,5-TRICHLOROPHENOL	95954	1.00E-001 I					3.7E+003 N	3.7E+002 N	1.4E+002 N	1.0E+005 N	7.8E+003 N		
2,4,6-TRICHLOROPHENOL	88062		1.10E-002 I		1.00E-002 I		6.1E+000 C	6.3E-001 C	2.9E-001 C	2.6E+002 C	5.8E+001 C		
2,4,5-T	93765	1.00E-002 I					3.7E+002 N	3.7E+001 N	1.4E+001 N	1.0E+004 N	7.8E+002 N	9.8E-002	2.0E+000 N
2-(2,4,5-TRICHLOROPHOENOXY)PROPIONIC ACID	93721	8.00E-003 I					2.9E+002 N	2.9E+001 N	1.1E+001 N	8.2E+003 N	6.3E+002 N	1.1E+000	2.1E+001 N
1,1,2-TRICHLOROPROPANE	598776	5.00E-003 I				y	3.0E+001 N	1.8E+001 N	6.8E+000 N	5.1E+003 N	3.9E+002 N	1.2E-002	2.5E-001 N
1,2,3-TRICHLOROPROPANE	96184	6.00E-003 I	2.00E+000 E	1.4E-003 E	y		5.3E-003 C	3.1E-003 C	1.6E-003 C	1.4E+000 C	3.2E-001 C	1.8E-006	3.6E-005 C
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	76131	3.00E+001 I		8.60E+000 H		y	5.9E+004 N	3.1E+004 N	4.1E+004 N	3.1E+007 N	2.3E+006 N	1.2E+002	2.3E+003 N
1,3,5-TRINITROBENZENE	99354	3.00E-002 I					1.1E+003 N	1.1E+002 N	4.1E+001 N	3.1E+004 N	2.3E+003 N		

Chemical	CAS						Tap water ug/l	Ambient air ug/m3	Fish mg/kg	Soil Industrial mg/kg	Residential mg/kg	Region III SSLs	
		RfDo mg/kg/d	CSFo 1/mg/kg/d	RfDi mg/kg/d	CSFi 1/mg/kg/d	VOC						DAF 1 mg/kg	DAF 20 mg/kg
2,4,6-TRINITROTOLUENE	118957	5.00E-004 I	3.00E-002 I				2.2E+000 C !	2.1E-001 C !	1.1E-001 C !	9.5E+001 C !	2.1E+001 C !		
**URANIUM (SOLUBLE SALTS; from IRIS)	7440611	3.00E-003 I		8.6E-005 M			1.1E+002 N	3.1E-001 N	4.1E+000 N	3.1E+003 N	2.3E+002 N		
**URANIUM (SOLUBLE SALTS; provisional)	7440611	2.00E-004 E		8.6E-005 M			7.3E+000 N	3.1E-001 N	2.7E-001 N	2.0E+002 N	1.6E+001 N		
VANADIUM	7440622	1.00E-003 E					3.7E+001 N	3.7E+000 N	1.4E+000 N	1.0E+003 N	7.8E+001 N	3.7E+001	7.3E+002 N
VINCOLOZOLIN	50471448	2.50E-002 I					9.1E+002 N	9.1E+001 N	3.4E+001 N	2.6E+004 N	2.0E+003 N		
VINYL ACETATE	108054	1.00E+000 H		5.71E-002 I	y		4.1E+002 N	2.1E+002 N	1.4E+003 N	1.0E+006 N	7.8E+004 N	8.7E-002	1.7E+000 N
VINYL CHLORIDE inc earlylife(see cover memos)	75014	3.00E-003 I	1.40E+000 I	2.8E-002 I	3.00E-002 I	y	1.5E-002 C	7.2E-002 C			9.0E-002 C	6.2E-006	1.2E-004 C
VINYL CHLORIDE: adult (see cover memos)	75014	3.00E-003 I	7.20E-001 I	2.8E-002 I	1.5E-002 I	y			4.4E-003 C	4.0E+000 C			
WARFARIN	81812	3.00E-004 I					1.1E+001 N	1.1E+000 N	4.1E-001 N	3.1E+002 N	2.3E+001 N	2.2E-002	4.4E-001 N
XYLEMES	1330207	2.00E-001 I		3.00E-002 I		y	2.1E+002 N	1.1E+002 N	2.7E+002 N	2.0E+005 N	1.6E+004 N	1.5E-001	3.0E+000 N
ZINC	7440666	3.00E-001 I					1.1E+004 N	1.1E+003 N	4.1E+002 N	3.1E+005 N	2.3E+004 N	6.8E+002	1.4E+004 N
ZINEB	12122677	5E-002 I					1.8E+003 N	1.8E+002 N	6.8E+001 N	5.1E+004 N	3.9E+003 N		

Sources: I = IRIS H = HEAST A = HEAST Alternate M = ATSDR MRL (chronic) E = EPA-NCEA provisional value O = other P = EPA provisional peer-reviewed m = Default ADAs applied, carcinogenic via mutagenic mode of action								Basis: C = Carcinogenic effects N = Noncarcinogenic effects I = RBC at HI of 0.1 < RBC-C; see Alternate RBCs II = See Alternate RBCs				Region III SSLs	
Chemical	CAS	RfDo mg/kg/d	CSFo 1/mg/kg/d	RfDi mg/kg/d	CSFi 1/mg/kg/d	VOC	Tap water ug/l	Risk-based concentrations			Soil, for groundwater migration	DAF 1 mg/kg	DAF 20 mg/kg
								Ambient air ug/m3	Fish mg/kg	Soil Industrial mg/kg			

## Supplement to RBC Table: Noncancer RBCs for "!" Chemicals

Last update 10/20/2006

These are the noncancer RBCs at an HI of 1 and 0.1 for "!" chemicals.

They are shown because screening at an HI of 0.1, in accordance with Region III guidance, will result in noncancer RBCs being lower than the cancer RBCs for certain chemicals marked with "!" on the standard RBC table.

	ug/l Tap		ug/m3 Air		mg/kg Fish		mg/kg Industrial		mg/kg Residential	
HI	1	0.1	1	0.1	1	0.1	1	0.1	1	0.1
aniline									547.5	54.75
epichlorohydrin									469	46.9
hexachlorobutadiene	7.3	0.73	0.73	0.073	0.27	0.027	204	20	15.6	1.56
hexachloroethane	36.5	3.65	3.65	0.365	1.35	0.135	1022	102	78	7.8
polybrominated biphenyls									0.55	0.055
aroclor-1016	2.55	0.255	0.255	0.0255	0.09	0.009	72	7.2		
aroclor-1254									1.56	0.156
2,4,6-trinitrotoluene	1.83E+001	1.83E+000	1.8	0.18	0.68	0.068	511	51	39	3.9

Nitrate and nitrite have MCLs of 10000 ug/L and 1000 ug/L, respectively, based on protection against methemoglobinemia in infants.

These MCLs may serve as alternate tap water RBCs for populations that include infants, because they are expected to be more sensitive to this endpoint than adults.

J. Soto assisted in the preparation of the original version of this table

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